



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

**FOURTH YEAR FIRST SEMESTER EXAMINATION FOR
THE DEGREE OF BACHELOR OF SCIENCE IN
PHARMACEUTICAL SCIENCES WITH INFORMATION
TECHNOLOGY**

MAIN CAMPUS

PPS 419: MOLECULAR PHYSIOLOGY

Date: 2nd March, 2018

Time: 3.30 - 6.30pm

INSTRUCTIONS:

- Answer ALL Questions in Section A and any other TWO in Section B.

Section A (40 mks)

1. Briefly, define the following terms:
 - a) Mediated transport (2 mks)
 - b) Active transport (2 mks)
 - c) Facilitated diffusion (2 mks)
2. Describe the compartmentalization of cellular fluids (4 mks)
3. Outline how glucose is transported across the plasma membrane (3 mks)
4. Write short notes on hypercalcaemia (4 mks)
5. Give examples of voltage gated ion channels (2 mks)
6. Differentiate between membrane depolarization and repolarization (4 mks)
7. Outline the function of the K⁺ leak channel (4 mks)
8. Why is phosphorylation important in signal transduction pathways? (3 mks)
9. What is the significance of the bicarbonate buffer in the overall regulation of the extracellular fluid pH? (5 mks)
10. Give the functions of vacuolar membranes (3 mks)
11. Outline the role of tumor suppressor genes in cancer (2 mks)

Section B (30 mks)

12. With the help of a diagram, discuss the generation of action potential by the neurons (15 mks)
13. Discuss chemical signaling of epinephrine (15 mks)
14. The biosynthesis of heme mainly takes place partly in Mitochondria and partly in Cytosol of the liver. Explain in detail the steps involved in heme synthesis (15 mks)
15. Discuss how cellular communication would result in the coordination of skeletal muscles (15 mks)